Product Overview

AAC (All Aluminium Conductor), also known as Aluminium Stranded Conductor, is a bare overhead conductor manufactured from hard-drawn Aluminum 1350-H19 wires. The aluminum is produced from electrolytically refined material with a minimum purity of approximately 99.7%.

Featuring high electrical conductivity, lightweight construction and good corrosion resistance, AAC conductors are widely used in overhead power transmission and distribution networks. They are particularly suitable for urban distribution systems, short-span overhead lines and coastal areas where corrosion resistance is an important consideration.

QZ Cable manufactures AAC conductors in various sizes and stranding configurations to meet different electrical, mechanical and installation requirements.

Construction

AAC conductors feature a concentric-lay-stranded construction consisting of one or more layers of hard-drawn Aluminum 1350-H19 wires stranded around a central aluminum wire or core strand.

Unlike ACSR conductors, AAC has no steel reinforcement. Its all-aluminum construction provides high electrical conductivity and good resistance to atmospheric corrosion.

The number of aluminum wires, conductor cross-sectional area and stranding configuration can be customized according to applicable standards and project specifications.

Key Characteristics

High Electrical Conductivity

Manufactured from high-purity Aluminum 1350-H19, AAC conductors offer excellent electrical conductivity, typically around 61% IACS, depending on the applicable material and product requirements.

Lightweight Construction

The all-aluminum structure provides a relatively low conductor weight, making AAC suitable for overhead distribution networks with short spans.

Good Corrosion Resistance

AAC conductors offer good resistance to atmospheric corrosion, making them suitable for coastal and other environments where corrosion resistance is important.

Simple Conductor Structure

Without a steel core or additional reinforcement, AAC features a straightforward concentric-lay-stranded construction.

Suitable for Short-Span Applications

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AAC offers high conductivity but lower tensile strength than AAAC and ACSR. It is therefore generally preferred for short-span applications where mechanical loading and sag requirements can be adequately managed.

Common Applications

Urban Power Distribution

Used in urban overhead distribution networks where pole spacing is relatively short and high electrical conductivity is required.

Coastal and Corrosive Environments

Suitable for coastal distribution lines and other locations exposed to humid or salt-laden atmospheres, subject to project environmental requirements.

Low-, Medium- and High-Voltage Overhead Lines

Applied in overhead electrical networks across different voltage levels, depending on conductor size, mechanical loading, clearance requirements and system design.

Secondary Distribution Networks

Used in short-span secondary distribution and other overhead power supply applications.

AAC vs. Other Common Conductors

Feature	AAC	AAAC	ACSR
Material	Aluminum 1350-H19	Aluminum alloy 6201	Aluminum 1350 + steel
Construction	All aluminum	All aluminum alloy	Aluminum with steel core
Electrical conductivity	High	Lower than AAC in typical designs	High
Tensile strength	Relatively low	Higher than AAC	High
Corrosion resistance	Good	Good	Depends on steel core protection
Typical application	Short-span distribution	Distribution and transmission	Long-span transmission

The appropriate conductor depends on electrical loading, span length, mechanical tension, environmental conditions and project design requirements.

Applicable Standards

AAC conductors can be manufactured and supplied in accordance with the following international standards, subject to the required conductor construction and project specifications:

- AS/NZS 1531 – Conductors – Bare overhead – Aluminium and aluminium alloy.
- DIN 48201 Part 5 – Aluminium stranded conductors for overhead lines.
- GOST 839-80 – Bare wires and stranded conductors for overhead power lines.
- BS 215-1 – Aluminium conductors for overhead power transmission.
- BS EN 50182 – Conductors for overhead lines – Round wire concentric lay stranded conductors.

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- IEC 61089 – Round wire concentric lay overhead electrical stranded conductors.
- ASTM B230 – Aluminum 1350-H19 Wire for Electrical Purposes.
- ASTM B231 – Concentric-Lay-Stranded Aluminum 1350 Conductors.

Installation requirements may also be subject to the National Electrical Code (NEC), where applicable. NEC is an electrical installation code rather than a conductor manufacturing standard.

Technical Specifications

AS/NZS 1531

Conductor code name	Stranding and wire diameter	Nominal overall diameter	Cross-sectional area	Approximate mass	Breaking load	Modulus of elasticity	Coefficient of linear expansion	DC resist. at 20°C	AC resist. at 50Hz
	no/mm	mm	mm2	kg/km	kN	GPa	x 10–6/°C	Ω/km	Ω/km
Leo	7/2.50	7.5	34.4	94.3	5.71	65	23	0.833	1.02
Leonids	7/2.75	8.25	41.6	113	6.72	65	23	0.689	0.842
Libra	7/3.00	9	49.5	135	7.98	65	23	0.579	0.707
Mars	7/3.75	11.3	77.3	211	11.8	65	23	0.37	0.452
Mercury	7/4.50	13.5	111	304	16.9	65	23	0.258	0.315
Moon	7/4.75	14.3	124	339	18.9	65	23	0.232	0.284
Neptune	19/3.25	16.3	158	433	24.7	65	23	0.183	0.224
Orion	19/3.50	17.5	183	503	28.7	65	23	0.157	0.192
Pluto	19/3.75	18.8	210	576	31.9	65	23	0.137	0.168
Saturn	37/3.00	21	262	721	42.2	64	23	0.11	0.135
Sirius	37/3.25	22.8	307	845	48.2	64	23	0.094	0.116
Taurus	19/4.75	23.8	337	924	51.3	65	23	0.0857	0.105
Triton	37/3.75	26.3	409	1120	62.2	64	23	0.0706	0.0872
Uranus	61/3.25	29.3	506	1400	75.2	64	23	0.0572	0.071
Ursula	61/3.50	31.5	587	1620	87.3	64	23	0.0493	0.0616
Venus	61/3.75	33.8	673	1860	97.2	64	23	0.0429	0.0539

DIN 48201 Part 5

Nominal Area		Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
Nominal	Teorical						

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mm^2	mm^2	No.×mm	mm	kg/km	KN	Ω/Km	A
16	15.89	7/1.70	5.1	43	2.84	1.8022	83
25	24.25	7/2.10	6.3	66	4.17	1.181	108
35	34.36	7/2.50	7.5	94	5.78	0.8333	134
50	49.48	7/3.00	9	135	7.94	0.5787	168
50	48.35	19/1.80	9	133	8.45	0.5951	166
70	65.81	19/2.10	10.5	181	11.32	0.4372	200
95	93.27	19/2.50	12.5	256	15.68	0.3085	248
120	116.99	19/2.80	14	322	18.78	0.2459	285
150	147.11	37/2.25	15.8	406	25.3	0.196	328
185	181.62	37/2.50	17.5	500	30.54	0.1588	373
240	242.54	61/2.25	20.3	670	39.51	0.1191	445
300	299.43	61/2.50	22.5	827	47.7	0.0965	506
400	400.14	61/2.89	26	1104	60.86	0.0722	602
500	499.83	61/3.23	29.1	1379	74.67	0.0578	688
625*	626.2	91/2.96	32.6	1732	95.25	0.0462	786
800*	802.09	91/3.35	36.9	2218	118.39	0.036	907
1000*	999.71	91/3.74	41.1	2767	145.76	0.0289	1026

IEC 61089

Code	Nominal Area	Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
	mm^2	No.×mm	mm	kg/km	KN	Ω/Km	A
10	10	7/1.35	4.05	27.4	1.95	2.8633	62
16	16	7/1.71	5.13	43.8	3.04	1.7896	84
25	25	7/2.13	6.39	68.4	4.5	1.1453	110
40	40	7/2.70	8.1	109.4	6.8	0.7158	147
63	63	7/3.39	10.17	172.3	10.39	0.4545	195
100	100	19/2.59	12.95	274.8	17	0.2877	259
125	125	19/2.89	14.45	343.6	21.25	0.2302	297
160	160	19/3.27	16.35	439.8	26.4	0.1798	345

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200	200	19/3.66	18.3	549.7	32	0.1439	396
250	250	19/4.09	20.45	687.1	40	0.1151	454
315	315	37/3.29	23.03	867.9	51.97	0.0916	522
400	400	37/3.71	25.97	1102	64	0.0721	603
450	450	37/3.94	27.58	1239.8	72	0.0641	647
500	500	37/4.15	29.05	1377.6	80	0.0577	688
560	560	37/4.39	30.73	1542.9	89.6	0.0515	736
630	630	61/3.63	32.67	1738.3	100.8	0.0458	789
710	710	61/3.85	34.65	1959.1	113.6	0.0407	845
800	800	61/4.09	36.81	2207.4	128	0.0361	905
900	900	61/4.33	38.97	2483.3	144	0.0321	967
1000	1000	61/4.57	41.13	2759.2	160	0.0289	1026
1120*	1120	91/3.96	43.56	3093.5	179.2	0.0258	1091
1250*	1250	91/4.18	45.98	3452.6	200	0.0231	1157
1400*	1400	91/4.43	48.73	3866.9	224	0.0207	1226
1500*	1500	91/4.58	50.38	4143.1	240	0.0193	1270

BS EN 50182

Code	Nominal Area		Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
	Nominal	Teorical						
	mm^2	mm^2	No.×mm	mm	kg/km	KN	Ω/Km	A
Gnat	25	26.9	7/2.21	6.63	73	4.83	1.0643	115
Mosquito	35	36.9	7/2.59	7.77	101	6.27	0.7749	140
Ladybird	40	42.8	7/2.79	8.37	117	7.28	0.6678	154
Bluebottle	70	73.6	7/3.66	10.98	201	11.78	0.388	215
Earwig	75	78.6	7/3.78	11.34	215	12.57	0.3638	223
Grasshopper	80	84.1	7/3.91	11.73	230	13.45	0.34	233
Clegg	90	95.6	7/4.17	12.51	261	15.3	0.2989	252
Beetle	100	106.4	19/2.67	13.35	292	18.08	0.2701	269
Bee	120	132	7/4.90	14.7	361	21.12	0.2165	307
Caterpillar	180	185.9	19/3.53	17.65	511	29.75	0.1546	379

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Spider	220	237.6	19/3.99	19.95	653	38.01	0.121	440
Moth	350	373.1	19/5.00	25	1025	59.69	0.077	579
Drone	350	372.4	37/3.58	25.06	1027	59.59	0.0774	577
Maybug	450	486.1	37/4.09	28.63	1341	77.78	0.0593	677
Scorpion	500	529.8	37/4.27	29.89	1461	84.77	0.0544	713
Cicada	600	628.3	37/4.65	32.55	1733	100.54	0.0459	788

BS 215-1

Code	Nominal Area		Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
	Nominal	Teorical						
	mm^2	mm^2	No.×mm	mm	kg/km	KN	Ω/Km	A
Midge	22	23.33	7/2.06	6.18	64	3.99	1.227	106
Gnat	25	26.8	7/2.21	6.6	73.8	4.83	1.0643	122
Mosquito	35	37	7/2.59	7.8	102.1	6.27	0.7749	141
Ladybird	40	42.8	7/2.79	8.4	117.9	7.28	0.6678	157
Ant	50	52.83	7/3.1	9.3	145	8.28	0.5419	175
Fly	60	63.55	7/3.4	10.2	174	9.9	0.4505	196
Wasp	100	106	7/4.39	13.17	290	16	0.2702	268
Hornet	150	157.6	19/3.25	16.25	434	25.7	0.1825	342
Charfer	200	213.2	19/3.78	18.9	587	35.4	0.1349	412
Cockroach	250	265.7	19/4.22	21.1	731	40.4	0.1083	471
Butterfly	300	322.7	19/4.65	23.25	888	48.75	0.08916	530
Centipede	400	415.2	37/3.78	26.46	1145	63.1	0.06944	616
Maybug	475	486,1	37/4,09	28,6	1342	0.05571	0,05900	740
Skorpion	500	529,8	37/4,27	29,9	1460	0.04916	0,05400	887
Cicada	600	628,3	37/4,65	32,6	1733	0.03423	0,04500	1056

ASTM B 231/B 231M

Code	Nominal Area		Stranding	Overall Diameter	Weight	Rated Strength	Electrical Resistance	Current Rating*
	AWG&MCM	mm^2	No.×mm	mm	kg/km	KN	Ω/Km	A
Peachbell	6	13.3	7/1.56	4.68	36.6	2.53	2.1477	75

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Rose	4	21.1	7/1.96	5.88	58.2	3.91	1.3606	99
Iris	2	33.6	7/2.47	7.41	92.6	5.99	0.8567	132
Pansy	1	42.4	7/2.78	8.34	116.6	7.3	0.6763	153
Poppy	1/0.0	53.5	7/3.12	9.36	147.2	8.84	0.5369	176
Aster	2/0.0	67.4	7/3.50	10.5	185.7	11.1	0.4267	203
Phlox	3/0.0	85	7/3.93	11.79	233.9	13.5	0.3384	234
Oxlip	4/0.0	107.2	7/4.42	13.26	295.2	17	0.2675	270
Valerian	250	126.7	19/2.91	14.55	348.6	20.7	0.2274	299
Sneezewort	250	126.7	7/4.80	14.4	348.8	20.1	0.2269	299
Laurel	266.8	135.2	19/3.01	15.05	372.2	22.1	0.2125	312
Daisy	266.8	135.2	7/4.96	14.88	372.3	21.4	0.2125	311
Peony	300	152	19/3.19	15.95	418.3	24.3	0.1892	335
Tulip	336.4	170.5	19/3.38	16.9	469.5	27.3	0.1686	359
Daffodil	350	177.3	19/3.45	17.25	487.9	28.4	0.1618	369
Canna	397.5	201.4	19/3.67	18.35	554.9	31.6	0.143	397
Goldentuft	450	228	19/3.91	19.55	627.6	35	0.126	429
Syringa	477	241.7	37/2.88	20.16	664.8	38.6	0.1192	444
Cosmos	477	241.7	19/4.02	20.1	664.8	37	0.1192	444
Hyacinth	500	253.3	37/2.95	20.65	696.8	40.5	0.1136	458
Zinnia	500	253.3	19/4.12	20.6	697.1	38.9	0.1134	458
Dahlia	556.5	282	19/4.35	21.75	775.8	43.3	0.1018	489
Mistletoe	556.5	282	37/3.12	21.84	775.7	44.3	0.1016	490
Meadowsweet	600	304	37/3.23	22.61	836.3	47.5	0.0948	511
Orchid	636	322.3	37/3.33	23.31	886.9	50.4	0.0892	530
Heuchera	650	329.4	37/3.37	23.59	907.4	51.7	0.0871	538
Flag	700	354.7	61/2.72	24.48	975.8	57.1	0.0811	561
Varbena	700	354.7	37/3.49	24.43	975.7	55.4	0.0812	561
Nasturtium	715.5	362.6	61/2.75	24.75	998.5	58.4	0.0793	569
Violet	715.5	362.6	37/3.53	24.71	998.5	56.7	0.0794	568
Cattail	750	380	61/2.82	25.38	1046	60.3	0.0754	587

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Petunia	750	380	37/3.62	25.34	1046	58.6	0.0755	586
Lilac	795	402.8	61/2.90	26.1	1110	63.8	0.0713	607
Arbutus	795	402.8	37/3.72	26.04	1109	61.8	0.0715	605
Snapdragon	900	456	61/3.09	27.81	1256	70.8	0.0628	654
Cockscomb	900	456	37/3.96	27.72	1256	68.4	0.0631	652
Goldenrod	954	483.4	61/3.18	28.62	1331	75	0.0593	677
Magnolia	954	483.4	37/4.08	28.56	1331	72.6	0.0594	676
Camellia	1000	506.7	61/3.25	29.25	1394	78.3	0.0568	695
Hawkweed	1000	506.7	37/4.18	29.26	1395	76.2	0.0566	696
Larkspur	1033.5	523.7	61/3.31	29.79	1442	81.3	0.0547	710
Bluebell	1033.5	523.7	37/4.25	29.75	1441	78.8	0.0547	710
Marigold	1113	564	61/3.43	30.87	1553	87.3	0.051	740
Hawthorn	1192.5	604.2	61/3.55	31.95	1662	93.5	0.0476	771
Narsissus	1272	644.5	61/3.67	33.03	1774	98.1	0.0445	802
Columbine	1351	694.8	61/3.78	34.02	1884	104	0.042	829
Carnation	1431	725.1	61/3.89	35.01	1997	108	0.0396	858
Gladiolus	1510.5	765.4	61/4.00	36	2108	114	0.0375	885
Coreopsis	1590	805.7	61/4.10	36.9	2216	120	0.0357	911
Jassamine	1750	886.7	61/4.30	38.7	2442	132	0.0324	962
Cowslip*	2000	1013	91/3.77	41.47	2787	153	0.0286	1032
Sagebrush*	2250	1140	91/3.99	43.89	3166	167	0.0255	1099
Lupine*	2500	1267	91/4.21	46.31	3519	186	0.0229	1163
Bitterrot*	2750	1393	91/4.42	48.62	3872	205	0.0208	1223
Trillium*	3000	1520	127/3.90	50.7	4226	223	0.0193	1271
Bluebonnet*	3500	1773	127/4.22	54.86	4977	261	0.0165	1373

GOST 839-80

Nominal Corss-section	Number of Wires	Wire Diameter	Calculated Cross-section	Overall Diameter	D.C. Resistance at 20	Min. Breaking Load	Conductor Weight	Grease Weight
mm2		mm	mm2	mm	Ω/km		kg/km	kg/km

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10	7	1,35	10,0	4,05	2,8631	1950	27,4	–
16	7	1,70	15,9	5,10	1,8007	3021	43,0	0,5
25	7	2,13	24,9	6,40	1,1498	4500	68,0	0,5
35	7	2,50	34,3	7,50	0,8347	5913	94,0	0,5
40	7	2,70	40,0	8,09	0,7157	6800	109,4	–
50	7	3,00	49,5	9,00	0,5784	8198	135,0	0,5
63	7	3,39	63,0	10,16	0,4544	10390	172,3	–
70	7	3,55	69,3	10,70	0,4131	11288	189,0	1,0
95	7	4,10	92,4	12,30	0,3114	14784	252,0	1,0
100	19	2,59	100,0	12,94	0,2877	17000	274,9	–
120	19	2,80	117,0	14,00	0,2459	19890	321,0	16
125	19	2,89	125,0	14,47	0,2301	21250	343,6	–
150	19	3,15	148,0	15,80	0,1944	24420	406,0	20
160	19	3,27	160,0	16,37	0,1798	26400	439,8	–
185	19	3,50	182,8	17,50	0,1574	29832	502,0	25
200	19	3,66	200,0	18,30	0,1438	32000	549,7	–
240	19	4,00	238,7	20,00	0,1205	38192	655,0	33
250	19	4,09	250,0	20,47	0,1150	40000	687,1	–
300	37	3,15	288,3	22,10	0,1000	47569	794,0	54
315	37	3,29	315,0	23,05	0,0915	51970	867,5	–
350	37	3,45	345,8	24,20	0,0833	57057	952,0	65
400	37	3,66	389,2	25,60	0,0740	63420	1072,0	73
450	37	3,90	449,1	27,30	0,0642	71856	1206,0	84
500	37	4,15	500,4	29,10	0,0576	80000	1378,0	94

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550	61	3,37	544,0	30,30	0,0529	89760	1500,0	117
560	37	4,39	560,0	30,73	0,0531	89600	1542,2	–
600	61	3,50	586,8	31,50	0,0491	95632	1618,0	126
630	61	3,63	630,0	32,64	0,0458	100800	1738,4	–
650	61	3,66	641,7	32,90	0,0450	104575	1771,0	138
700	61	3,80	691,7	34,20	0,0417	112725	1902,0	149
710	61	3,85	710,0	34,65	0,0406	113600	1959,2	–
750	61	3,95	747,4	35,60	0,0386	119584	2062,0	161

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